INDUSTRIAL HYGIENE INFORMATION AND REGULATORY ACTIONS SUMMARY

November 2004

REGULATORY ACTIONS

Recordkeeping and Reporting Requirements for Federal Agencies Changed

The Occupational Safety and Health Administration (OSHA) published a final rule in the November 26th Federal Register that will require federal government agencies to adopt worker safety and health recordkeeping and reporting requirements that are essentially identical to the private sector. The new requirements will go into effect beginning January 1, 2005. "These new requirements will improve recordkeeping which will enhance the ability of federal agencies and employees to prevent occupational injuries and illnesses," said OSHA Administrator John Henshaw. "Producing more useful data will better enable the agencies to identify patterns of injuries and illnesses and focus on the most effective intervention."

While the regulation will become effective January 1st, notices of violations will not be issued during the first year as long as agencies are making a reasonable effort to comply with the requirements. OSHA will launch a comprehensive outreach and compliance assistance effort early in the implementation period to educate and train federal agencies on the new recording requirements.

The new requirements will enhance the capacity of agency safety and health managers to focus the attention of their illness and injury prevention programs on the most significant hazards; identify types or patterns of injuries and illnesses whose investigation will lead to prevention efforts such as improved work practices or technology development; and provide useful priority-setting information for establishment inspections within an agency.

The new recordkeeping requirements will produce an information base that can assist federal agencies and their employees to maintain safe and healthy working conditions. The importance of accurate recordkeeping to lower injury and illness rates is indicated by experience with OSHA's Voluntary Protection Program (VPP), a program that recognizes federal agencies and private sector employers with exemplary safety and health programs. VPP worksites, which have comprehensive safety and health management programs that include effective injury, illness, and accident recordkeeping, generally have lost workday case rates ranging from one-fifth to one-third the rates experienced by most worksites in the same industry.

The new federal agency recordkeeping and reporting requirements may be found at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=18264.

OSHA Takes First Steps to Update National Consensus Standards

OSHA is seeking public comments on its overall project to update agency standards that reference or are based on outdated national consensus standards. The agency is also seeking comments on the first rulemaking actions associated with the update project, a direct final rule and notice of proposed rulemaking to revoke five references to national consensus standards and industry standards that are outdated.

OSHA is engaging in an overall effort to update OSHA standards that reference or include language taken directly from outdated consensus standards. This includes updating or revoking outdated consensus standards incorporated by reference, and updating regulatory text of current OSHA rules that were adopted directly from the language of outdated consensus standards. The Agency will use a variety of regulatory approaches, including formal (notice and comment) rulemaking, direct final rulemaking, and technical amendments, for updating or revoking outdated consensus standards incorporated by reference, and updating regulatory text of current OSHA rules that were adopted directly from the language of outdated consensus standards.

In the first rulemaking action, OSHA is proposing to revoke references found in its standards on Temporary Labor Camps, Guarding of Portable Power Tools, Sawmills, Flammable and Combustible Liquids, and Arc Welding and Cutting, all of which reference outdated consensus or industry standards. Revisions to the standards are being made through the direct final rule approach. This expedited approach saves regulatory resources over the more traditional rulemaking by streamlining one stage in the rulemaking process. In direct final rulemaking, OSHA publishes a final rule and proposed rule in the Federal Register at the same time. If no significant adverse comments are received on the direct final rule, it will become effective February 22, 2005. However, if such comments are received, OSHA will withdraw the direct final rule and address the comments in a subsequent final rule document.

Find the proposal on OSHA's web site at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=FEDERAL_REGISTER&p_id=18260.

LEGISLATIVE ACTIONS OF INTEREST

California Governor Vetoes Hospital Ergonomics Legislation

Citation: "*Attempt to Regulate Hospital Lifts Doesn't Fly In California*," by J. Croasmun, *Ergoweb*, November 2004, http://www.ergoweb.com/news/detail.cfm?id=1012.

California assembly bill 2532 would have made concepts like lift-teams, zero-lift policies and lift-assist equipment mandatory components of health care in the state, had it been turned into law. But in September 2004, the state's governor vetoed the bill drafted by

the California Nurse's Association (CNA) on the grounds that it was too costly for the industry.

"Because I am concerned about the financial burden hospitals are already under, I cannot support the costly mandate imposed on them by AB 2532," wrote California governor Arnold Schwarzenegger in a message regarding his decision to veto the bill. "Although the goal of having all hospitals implement a standardized lift policy that includes lift teams and modern equipment is laudable, it need not be mandated in statute. Procedures to limit injuries caused by the lifting patients should already be a part of a hospital's mandatory Injury and Illness Prevention Program (IIPP)."

Nurses groups didn't agree that the law that, if passed, would have been the first of its kind in the nation, was bad for business. "A number of hospitals and hospital systems already provide lift teams, including Kaiser Permanente, which supports AB 2532, and says its zero lift policy has reduced RN back injuries by 39 percent," said a CNA press statement. The group also noted that there was a cost benefit from the reduction of injuries. "Besides causing RNs intense pain, back injuries are adding to the state's workers' compensation costs and exacerbating the nursing shortage by cutting RN careers short," the group said, indicating that 12 percent of nurses who leave the field do so because of back injuries and pointing to another recent study that found that 52 percent of all nurses complain of chronic back pain that may be linked to lifting patients.

While Schwarzenegger didn't pass the bill, he did recommend that hospitals "review their lift policies to determine the extent to which they can develop lift teams and purchase machinery to assist in lifting patients." He also suggested that "modern lift technologies" be incorporated into new construction and renovation projects at hospitals.

AIHA Governmental Affairs "Happenings" Legislative Items of Interest

Congress Concludes Budget Negotiations – Session to Conclude In December

With most of Washington still contemplating the ramifications of the November election, Congress returned to town in mid-November to finish up several important items before adjourning the 108th Session.

Tops on the agenda for the "lame-duck" session was the revamping of the intelligence agencies pursuant to the recommendations of the 9/11 Commission. On this issue, Congress could not reach an agreement and no one is quite sure what will happen next. Congress plans on returning to Washington for a couple of days in December and this issue may yet be on the agenda.

On the budget front, it looks as if things have finally been worked out. With Congress approving a budget that included 13 separate appropriations measures totaling nearly $400 billion dollars, looking out for OSHA and NIOSH in this massive document was not easy. In the end though, these agencies should be somewhat pleased with the final result.

OSHA

Here is the breakdown for the 2005 fiscal year budget for OSHA:

2004 appropriations	$457,541 million
Presidents request for 2005	$461,599 million
House appropriation	$461,599 million
Senate appropriation	$468,645 million
Conference report	$468,109 million

As expected, the final appropriation was much closer to the Senate report than the House report. The difference between the House and Senate was the Senate's wish to continue funding for training grants. Other differences between 2004 and 2005 were increases of just over $5 million in federal enforcement dollars and an increase of over $4 million in federal compliance assistance.

However, hidden within the report language of the OSHA budget was one additional request from Congress. The Conference Committee accepted House report language regarding OSHA's enforcement of the Respiratory Standard as it applies to tuberculosis. The conferees advised OSHA to take no further action with regard to respiratory protection for occupational exposure to TB until such time as the CDC has completed the ongoing revisions of its TB guidelines. The actual bill language states "that none of the funds appropriated shall be obligated or expended to administer or enforce the provisions of the General Industry Respiratory Standard to the extent that such provisions require the annual fit testing (after the initial fit testing) of respirators for occupational exposure to TB".

All in all, with Congress tightening the purse strings on numerous federal departments and agencies, OSHA faired pretty well.

NIOSH

As for NIOSH, there were two very important issues. One involved the total appropriations for the Institute and the other dealt with the ongoing CDC reorganization that would place the Institute under a new coordinating center within CDC.

Here is the breakdown for the 2005 fiscal year budget for NIOSH:

2004 appropriations	$277,000 million (approximate)
Presidents request for 2005	$278,100 million
House appropriation	$280,186 million
Senate appropriation	$294,587 million
Conference report	$287,745 million

Included in this final appropriation are increases of $1.5 million for the Education and Research Centers, $2 million for the National Occupational Research Agenda (NORA), and $1.4 million for the National Personal Protective Technologies Laboratory.

But the most important language in the NIOSH appropriations dealt with the reorganization of the Institute. The Senate report language had questioned this reorganization and urged the conferees to adopt language that would maintain the existing structure and reporting relationship of the Director. The Conference Committee agreed with this request. The final report language states "the Conferees concur in the directives in the Senate report regarding the NIOSH reporting relationship with the Director of CDC, their operating procedures, and organizational structure".

While this is certainly great news for occupational safety and health research, there is still some concern that the final bill leaves the door open for CDC to "reprogram" funds within the Institute. Over the next several weeks there will undoubtedly be numerous interpretations of this language.

AIHA, ASSE and numerous other organizations were firmly opposed to the reorganization plan and wrote letters, attended meetings and did everything possible to see that Congress fully understood the ramifications of the pending reorganization.

OSHA ACTIVITIES

Henshaw Resigns

Secretary of Labor Elaine Chao announced the resignation of Assistant Secretary of Labor for Occupational Safety and Health John L. Henshaw. Henshaw is departing his post at the Department of Labor on December 31, 2004.

"As head of the Occupational Safety and Health Administration, John Henshaw has demonstrated outstanding leadership, great wisdom and sincere concern for the safety and health of America's workers," said Secretary of Labor Elaine L. Chao. "John's efforts have been instrumental in creating safer and more healthful workplaces. Under his leadership, workplace fatalities have declined to record lows, and fatalities among Hispanic workers, which had been increasing since 1995, have been reduced by nearly 12 percent since 2001."

Henshaw was nominated by President George W. Bush to head OSHA on June 13, 2001 and was confirmed by the U.S. Senate on August 3, 2001. During his administration, OSHA has pursued a program of firm and fair enforcement, combined with outreach, education, and compliance assistance to reduce the number of fatalities, injuries and illnesses in workplaces covered by the Occupational Safety and Health Act. The agency has consistently exceeded inspection goals, and created hundreds of alliances and partnerships with business, labor and community groups to foster safety and health. Because of these efforts, there are now more than 1,100 sites in OSHA's Voluntary Protection Program, more than 200 Strategic Partnerships Program sites and nearly 200 Alliances. More than 350 of these cooperative programs involve unions, which is an all-time high.

New Appointments at OSHA

U.S. Secretary of Labor Elaine Chao announced that Jonathan L. Snare has been appointed the deputy assistant secretary for the Occupational Safety and Health Administration (OSHA). Secretary Chao also announced that Snare, who has worked closely with OSHA in the Solicitor's Office, would also serve as acting assistant secretary upon the departure of the current OSHA Assistant Secretary John Henshaw on December 31, 2004.

Kim Lazor, special assistant to the assistant secretary, will also assume a larger role in the agency's operations. Over the last three years, Lazor has been key to OSHA's expanding compliance assistance efforts and stakeholder outreach.

In addition, R. Davis Layne, deputy assistant secretary for OSHA, has announced that he will retire from the federal government effective December 31, 2004, after more than 37 years of government service. In January, he will take the reins of the Voluntary Protection Programs Participants' Association (VPPPA) as its executive director. Steve Witt will assume the position of acting deputy assistant secretary for OSHA as Layne moves on. Witt has been with OSHA since 1983 and is currently the director of OSHA's Directorate of Standards and Guidance.

OSHA Inspection Goal Exceeded, Total Violations Increased In 2004

OSHA Chief John Henshaw released the agency's annual enforcement statistics in November, affirming that OSHA's balanced approach to workplace safety and health includes strong, fair and effective enforcement programs. Henshaw said the agency exceeded its inspection goal for FY 2004, completing 39,167 total inspections including more than 300 under the new Enhanced Enforcement Program (EEP) that focuses on employers who repeatedly ignore their safety and health obligations. OSHA also completed nearly 3,000 inspections within industries identified with high injury and illness rates.

Henshaw said the agency cited 86,708 violations of OSHA standards and regulations during FY 04, an increase of 3.8 percent over the previous year and nearly 10 percent over the last five years. Of particular significance was the increase in serious and willful violations issued during FY 04 (three and 14 percent, respectively, over FY 03).

Henshaw said the increases demonstrate that OSHA is targeting the right workplaces for inspections by accurately identifying employers who repeatedly or willfully violate the law.

Henshaw also noted that injury and illness rates continue to decline and that fatality rates held their downward trend-over the past five years, the rate has decreased 11 percent.

OSHA Offers Tips to Protect Workers in Cold Environments

With the onset of cold weather, OSHA is reminding employers and workers to take necessary precautions, such as those listed on OSHA's Cold Stress Card, to prevent and treat cold-related health problems. Workers in construction, commercial fishing, maritime and agriculture are among those who need to take precautions.

Prolonged exposure to freezing or cold temperatures may cause serious health problems such as trench foot, frostbite and hypothermia. In extreme cases, including cold-water immersion, exposure can lead to death. Danger signs include uncontrolled shivering, slurred speech, clumsy movements, fatigue and confused behavior. If these signs are observed, call for emergency help.

OSHA's Cold Stress Card provides a reference guide and recommendations to combat and prevent many illnesses and injuries. Available in English and Spanish, this laminated fold-up card is free to employers, workers and the public. Tips include:

How to Protect Workers

Recognize the environmental and workplace conditions that may be dangerous.

- Learn the signs and symptoms of cold-induced illnesses and injuries and what to do to help workers.
- Train workers about cold-induced illnesses and injuries.
- Encourage workers to wear proper clothing for cold, wet and windy conditions, including layers that can be adjusted to changing conditions.
- Be sure workers in extreme conditions take a frequent short break in warm dry shelters to allow their bodies to warm up.
- Try to schedule work for the warmest part of the day.
- Avoid exhaustion or fatigue because energy is needed to keep muscles warm.
- Use the buddy system - work in pairs so that one worker can recognize danger signs.
- Drink warm, sweet beverages (sugar water, sports-type drinks) and avoid drinks with caffeine (coffee, tea, sodas or hot chocolate) or alcohol.
- Eat warm, high-calorie foods such as hot pasta dishes.

- Remember, workers face increased risks when they take certain medications, are in poor physical condition or suffer from illnesses such as diabetes, hypertension or cardiovascular disease.

For copies of OSHA's Cold Stress Card, go to OSHA's website, http://www.osha.gov/Publications/osha3156.pdf (English) / http://www.osha.gov/Publications/osha3158.pdf (Spanish), or call 1(800) 321-OSHA.

National Advisory Committee on Ergonomics (NACE) Offers OSHA Its Final Recommendations

At their final meeting in Washington on November 17, the National Advisory Committee (NACE) recommended OSHA expend effort on the identification of research gaps, improving ergonomics success story collections and distribution processes, and ensuring that ergonomics is part of an overall safety and health program. The committee's work groups -- guidelines, research, and outreach and assistance -- proposed their final recommendations to the full committee for further presentation to OSHA. The two-day meeting culminated a process begun two years ago when Secretary of Labor chartered NACE to provide advice and recommendations to help OSHA reduce musculoskeletal disorders (MSDs) in the workplace.

OSHA Administrator John Henshaw thanked the committee members for their dedication and hard work over the past two years, saying, "Over the past two years, you've helped us move forward in addressing ergonomics in America's workplaces. And while the committee's charter is expiring, ergonomics remains an important issue to the agency. We still have much to learn about ergonomics and we still have the challenge of putting what we already know into practice. You've helped us identify some strategies for the future and we are deeply grateful."

Adding to previous recommendations regarding outreach and assistance, NACE suggested that OSHA increase the number, quality and use of ergonomic success stories posted on the agency's website and offered a success story template to facilitate the process.
http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=NEWS_RELEASES&p_id=11128

NIOSH ACTIVITIES

Economic Cost of Fatal Occupational Injuries in the United States

Researchers are enhancing a previously developed NIOSH computerized costing model for calculating the societal costs of fatal occupational injuries using the cost-of-illness method. Using the model, researchers have shown that between 1992 and 2001 the cost of fatal occupational injuries in the U.S. was $48.7 billion. The model takes into account medical costs, the present value of future earnings summed from the year of death until the worker would have reached age 67 and the value of home production lost. Costs can be separated by gender, age, race, occupational, industry, or event. Current efforts to improve the model include expansion to calculate the cost of fatal

occupational injuries using Census of Fatal Occupational Injury (CFOI) data, improving model specificity by estimating indirect costs using state-specific wage and benefit data, and improving the operational utility of the model. The calculated costs from this study can be used in evaluation tools to more efficiently allocate resources for research and prevention efforts. For more information on this study, contact Elyce Biddle at EBiddle@cdc.gov.

EPA ACTIVITIES

EPA Releases Notice of Data Availability for Clean Air Mercury Rule

The Environmental Protection Agency (EPA) released a Notice of Data Availability (NODA) for its proposed Clean Air Mercury Rule on November 30th. The NODA summarizes the more than 680,000 public comments received during the comment period and solicits further comment on new data and information to help EPA evaluate which regulatory approach will best reduce mercury emissions from power plants. The NODA is part of the EPA process toward delivering a final mercury rule by March 15, 2005. Initially proposed on January 30, 2004, the Clean Air Mercury Rule would reduce mercury emissions from power plants for the first time ever.

EPA received a number of modeling analyses from various groups, including both industry and environmental groups. In some cases, EPA and commenters modeled the same or similar policy scenarios, sometimes using the same model, but obtained substantially different results due to differences in the assumptions employed. In these cases, model-input assumptions can be better understood by comparing and contrasting the modeling performed. The NODA shares these analyses and seeks additional comment on the models and assumptions used.

Administrator Mike Leavitt has outlined five guiding principles that provide context for additional inquiry and that narrow the focus of the Agency's deliberations. The five principles will ensure that the final mercury rule:

1) Concentrates on the need to protect children and pregnant women from the health impacts of mercury;
2) Stimulates and encourages early adopters of new technology that can be adequately tested and widely deployed across the full fleet of U.S. power plants utilizing various coal types;
3) Significantly reduces total emissions by leveraging the $50 billion investment that CAIR will require;
4) Considers the need to maintain America's competitiveness; and
5) Comprises one of many agency actions to reduce mercury emissions.

In December 2003, EPA proposed two alternatives for controlling mercury. One approach would require power plants to install controls known as "maximum achievable control technology" (MACT) under section 112 of the Clean Air Act. If implemented, this proposal would reduce nationwide mercury by 14 tons or about 30 percent by early 2008. Currently, nationwide mercury emissions from power plants are about 48 tons per year.

A second approach would create a market-based "cap and trade" program that, if implemented, would reduce nationwide power plant emissions of mercury in two phases. Beginning in 2010, the first phase would reduce power plant mercury emissions by taking advantage of "co-benefit" controls – mercury reductions achieved by reducing SO_2, and NO_x emissions under the Clean Air Interstate Rule. In 2018, the second phase of the mercury program sets a cap of 15 tons. When fully implemented, mercury emissions would be reduced by 33 tons (nearly 70 percent).

EPA will take comment on this action for 30 days after publication in the Federal Register. For more information on the NODA, visit: http://www.epa.gov/mercury/control_emissions/noda.htm; on the Clean Air Mercury Rule, visit: http://www.epa.gov/air/mercuryrule/; and on the Clean Air Interstate Rule, visit: http://www.epa.gov/interstateairquality/.

EPA Removes Chemicals from Lists of Regulated Pollutants

The EPA has finalized several actions that will create incentives for industry to use solvents that are less toxic and may help decrease the formation of ground-level ozone or smog. Each of these actions is based on extensive scientific and technical review over a period of years. These reviews concluded that the chemicals pose less risk than previously thought and that reclassifying them would not compromise public health, and may even benefit public health if they are substituted for more toxic or environmentally damaging chemicals.

Under the authority of the Clean Air Act, EPA has exempted six chemicals: the solvent ethylene glycol mono-butyl ether (EGBE) has been removed from the list of air toxics (also known as hazardous air pollutants) and the chemical t-butyl acetate (TBAC) and four others exempted from control as volatile organic compounds (VOCs). Public comment was received and considered in making this determination. The last EPA exempted chemical was an air toxic (caprolactam) in 1996.

Exempting a VOC requires a demonstration that the compound is negligibly reactive, meaning the compound forms less ground-level ozone than ethane. EPA has exempted 48 VOCs since 1977.

EGBE Delisting: EGBE is used in hydraulic fluids and in water-based coatings for various industries including metal can manufacturers. It is also used in varnishes, vinyl and acrylic paints, and as a solvent for varnishes, enamels, spray lacquers, dry cleaning compounds, textiles and cosmetics. EPA received a petition in 1997 from the American Chemistry Council to delist EGBE. After extensively reviewing the levels of EGBE in the air and the health and environmental impacts associated with those levels, EPA has concluded that potential outdoor exposures to EGBE may not reasonably be anticipated to cause human health or environmental problems. This action follows two detailed reviews on the sufficiency and technical merit of a 1997 petition to remove EGBE from the list. Although EGBE use (and, therefore, emissions) may increase as a result of this action, this action creates incentives for industry to use EGBE instead of other more toxic solvents. Firms must still report EGBE under the Toxics Release Inventory and EPA will continue to regulate it as a VOC. Copies of the original petition and its supporting information are available for public inspection and copying at the following address: U.S. Environmental Protection Agency, Air and Radiation Docket and Information Center (6102), 1200 Pennsylvania Ave. N.W., Washington, D.C. 20460. For further information including the final rule and the Federal Register notice once published, go to EPA's web site at: http://www.epa.gov/airlinks/airlinks1.html.

TBAC Exemption: TBAC is a chemical that is currently used to make pharmaceuticals, pesticides, and other products and that also can be used as a solvent in a variety of applications. EPA received a petition from Lyondell Chemical (formerly ARCO Chemical) in 1997 asking EPA to consider excluding TBAC from the VOC definition. After extensive review, EPA has determined that TBAC meets the criteria used to define a compound as "negligibly reactive." Exclusion of this compound as a VOC will help states focus on controlling emissions of those pollutants that are demonstrated to be ozone precursors. In addition, a number of manufacturers of paints, inks, and adhesives have indicated that if TBAC were excluded from regulation as a VOC, they would use it in their products in place of other compounds that are as much as 20 to 30 times more likely to form ground-level ozone, or smog. Such substitutions will help decrease ground-level ozone formation, generating public health benefits. Interested parties can download the rule from the EPA's web site on the Internet under "recent actions" at the following address: http://www.epa.gov/airlinks/airlinks1.html.

Additional Compounds: EPA is excluding HFE-7000, HFE-7500, HFC 227ea and methyl formate from control as VOCs. These compounds, which are used as refrigerants, fire suppressants, and propellants, contribute little or nothing to ground-level ozone formation. All four of these compounds are environmentally preferable substitutes for CFCs and HCFCs, which contribute to the destruction of Earth's stratospheric ozone layer. Interested parties can download the final rule from EPA's web site on the Internet under "recent actions" at the following address: http://www.epa.gov/airlinks/airlinks1.html.

In a separate action, EPA is taking phosmet off the "Extremely Hazardous Substance" (EHS) list under section 302 of the Emergency Planning and Community Right to Know Act (EPCRA) and will no longer be subject to reporting requirements under that section (e.g. notifying their State Emergency Response Commission and Local Emergency Planning Committee that they are subject to the emergency planning provisions of EPCRA section 302 for the chemical phosmet). Phosmet is a non-systemic organophosphate insecticide used for agricultural crop protection of fruit, nut and certain field crops. Phosmet is still a "hazardous chemical" under section 311 and 312 requirements, except when it is used in routine agricultural operations, such as a pesticide applied on crops. Therefore, facilities that process or distribute phosmet would still be subject to EPCRA section 311 and 312 reporting requirements (inventory and material safety data sheets) if they have phosmet present in amounts equal to or greater than 10,000 pounds. This action does not alter EPA's ongoing regulation of phosmet under the Agency's existing pesticide regulatory program. Forty-six chemicals have been deleted from the list since its inception because they did not meet the toxicity criteria. For more information on phosmet, go to: http://www.epa.gov/pesticides/op/phosmet.htm. For information on the Emergency Planning and Community Right to Know Act, go to: http://yosemite.epa.gov/oswer/ceppoweb.nsf/content/epcraOverview.htm.

Regulatory Action to Complement Phase-Out of Two Flame Retardant Chemicals

To complement a voluntary phase-out of the manufacture of two common flame retardant chemicals scheduled for the end of this year, EPA is taking action to ensure that no new manufacture or import of two flame retardant chemicals occurs after January 1, 2005, without first being subject to agency review. The two chemicals, Penta and Octa, are part of a chemical group called polybrominated diphenyl ethers, or PBDEs, and have been used as flame retardants in commercial products such as furniture foam and structural plastics in small electronic appliances and computers.

This action follows a November 3, 2003, announcement by the Great Lakes Chemical Corp., the only U.S. manufacturer of Penta and Octa, which agreed to voluntarily phase out production of these chemicals by December 31, 2004. This regulatory procedure by EPA, known as a Significant New Use Rule, will ensure that prior to any manufacture or import of these chemicals, EPA will have 90 days to evaluate potential risks, and can prohibit or limit any new use or activity that may pose a concern. EPA is concerned

that manufacturing could be restarted in the future, and this action provides EPA the opportunity to evaluate and, as appropriate, control future uses associated with both Penta and Octa.

Phasing out these two chemicals, while spurring the development of safer alternatives, without compromising the benefits derived from flame retardant use, are priorities for EPA and various stakeholders. The Agency is also evaluating PBDE chemical test data submitted by industry in the Voluntary Children's Chemical Evaluation Program and will make the results of this evaluation available this winter.

While flame retardants save lives and protect property, there have been unintended consequences from their use. PBDEs have been found in human breast milk, fish, aquatic birds and elsewhere in the environment. Toxicological testing indicates that these chemicals may be harmful to humans.

More information on PBDEs, the Significant New Use Rule and the Furniture Flame Retardancy Partnership is available at: http://www.epa.gov/oppt/pbde.

TECHNICAL ARTICLES OF INTEREST

Predicting the Effect of High RH on Organic Vapor Cartridge Performance

Citation: *"Predicting the Effect of High RH on Organic Vapor Cartridge Performance",* by Erik Johnson, Occupational Health and Safety, November 2004.

OSHA regulations for the use of chemical cartridges require the establishment of change schedules based on objective information. One of the most commonly used mathematical models for estimating the service life of organic vapor (OV) cartridges was developed by Gerry Wood. However, this model does not account for the potential effect of relative humidity (RH) above 50 percent on service life.

The effect of RH on service life of OV cartridges depends on the relative humidity level, the chemical concentration, volatility of the chemical and the chemical's miscibility (ability to dissolve) in water. The severity of the effect of high RH on the performance of OV cartridges is often underestimated. Early work by Gary Nelson demonstrated that OV cartridges preconditioned and tested at 90 percent RH had only about half the service life of cartridges preconditioned and tested at 50 percent RH. However, these tests were conducted at a challenge concentration of 1000 ppm. Nelson's observation that humidity has an even greater effect on cartridge performance at lower concentrations commonly seen in workplaces has been widely ignored.

A paper presented by this author at the 2001 American Industrial Hygiene Conference and Exposition described the effect of RH on OV cartridges at workplace concentrations (5-1000 ppm). Correction factors were measured for several organic solvents representing a wide range of volatility, including n-hexane, benzene, toluene, and styrene (see Table 1). Cartridges were tested without preconditioning to mimic the dynamic competition of water and solvent vapor for active sites on fresh cartridges.

Testing was done at a flow rate of 32 L/min per cartridge (equivalent to 64 L/min for a pair of cartridges) to 1 percent breakthrough.

Table 1. Vapor Pressure at 20º C and Boiling Point for Four Solvents

Solvent	*Vapor Pressure, mmHg*	*Boiling Point, ºC*
n-Hexane	124	69
Benzene	75	80
Toluene	21	110.6
Styrene	5	145-146

Discussion

Figures 1, 2, and 3 (Figures may be found at the magazine web site archive - http://www.stevenspublishing.com/Stevens/OHSpub.nsf/PubArchive?openview under November 2004) illustrate the correction factors necessary to adjust a service life estimate calculated at 50 percent RH for each solvent at various challenge concentrations and higher RH. The RH effect is greatest for volatile chemicals such as n-hexane at low concentrations. For chemicals with low volatility, such as styrene, the effect of high relative humidity is small at any concentration.

In practice, a 50 percent RH service life estimate should be divided by the correction factor to determine the predicted service life at 75, 85, or 90 percent RH. For example, 25 ppm toluene at 85 percent RH would require a correction factor of about 4.

For solvents not shown on the figures, the compound with the closest vapor pressure or boiling point could be used as a surrogate. Methyl ethyl ketone has a boiling point of 79.5º C and a saturation vapor pressure of about 75 mm Hg at 20º C. Therefore, the author recommends that the correction factors for benzene may be used.

Service life testing was also done at 65 percent RH. Compared to the tests done at higher RH, the effects were very limited. Correction factors for the most volatile solvent in this study, n-hexane, ranged from 1.9 at 25 ppm to 1.0 (no correction at all) at 1000 ppm.

The tests in this study were done with water immiscible (insoluble) solvents to demonstrate worst-case RH effects. Water miscible solvents are less strongly affected by RH. At room temperature, 85 percent RH is equivalent to about 27,000 ppm water.

Under these conditions, a significant amount of water will be adsorbed into the carbon pores. This allows increased loading of water miscible compounds or even compounds that are normally considered only slightly soluble in water. For example, ethylene dichloride and methyl ethyl ketone were less strongly affected by high RH than non-miscible compounds with the same chemical properties and adsorption capacity.

It should be noted that unlike OV performance, service life for cartridges designed to remove acid gases and bases may actually improve at high RH. Water vapor may improve interaction between the chemical treatment on the carbon and the acid or base contaminant. Testing of these compounds for the 3M Service Life Software™ was done at 50 percent RH to represent a challenging environment. More work needs to be done to determine what correction factors may be needed in lower RH environments.

Conclusion

These experiments illustrate the potentially dramatic effect of relative humidity on OV cartridge service life. Nelson's widely quoted observation that high humidity reduces service time by half holds true only at high contaminant concentrations. The impact of high RH must be considered when establishing cartridge change schedules. Service life estimates calculated at low RH should be divided by the appropriate safety factor when high RH is present in the workplace. Professional judgment should be used, and users also may wish to conduct testing on the performance of OV cartridges in their work environments.

Acinetobacter baumannii **Infections Among Patients at Military Medical Facilities**

Source: "*Acinetobacter baumannii Infections Among Patients at Military Medical Facilities Treating Injured U.S. Service Members, 2002--2004*", MMWR Weekly Report, November 19, 2004 / 53(45); 1063-1066, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5345a1.htm.

Acinetobacter baumannii is a well known but relatively uncommon cause of healthcare-associated infections. Because the organism has developed substantial antimicrobial resistance, treatment of infections attributed to *A. baumannii* has become increasingly difficult. This report describes an increasing number of *A. baumannii* bloodstream infections in patients at military medical facilities in which service members injured in the Iraq/Kuwait region during Operation Iraqi Freedom (OIF) and in Afghanistan during Operation Enduring Freedom (OEF) were treated. The number of these infections and their resistance to multiple antimicrobial agents underscore

1) the importance of infection control during treatment in combat and health-care settings and
2) the need to develop new antimicrobial drugs to treat these infections.

During January 1, 2002 - August 31, 2004, military health officials identified 102 patients with blood cultures that grew *A. baumannii* at military medical facilities treating service members injured in Afghanistan and the Iraq/Kuwait region. All of these cases

met the criteria for *A. baumannii* bloodstream infection on the basis of criteria established by CDC's National Nosocomial Infection Surveillance (NNIS) system. Of these 102 cases, 85 (83%) were associated with activities during OIF and OEF. Most of the infections were reported from Landstuhl Regional Medical Center (LRMC), Germany (33 patients: 32 OIF/OEF casualties, one non-OIF/OEF), and Walter Reed Army Medical Center (WRAMC), District of Columbia (45 patients: 29 OIF/OEF casualties, 16 non-OIF/OEF). In both facilities, the number of patients with *A. baumannii* bloodstream infections in 2003 and 2004 exceeded those reported in previous years (one case during 2000 - 2002 at LRMC; two cases during 2001 - 2002 at WRAMC).

Of the 33 patients with *A. baumannii* bloodstream infections at LRMC, 32 (97%) were men; the median age was 30 years. Thirty (91%) patients sustained traumatic injuries in either the Iraq/Kuwait region (25) or in Afghanistan (five). The majority (67%) were active-duty members of the U.S. Armed Forces. Thirty-two (97%) were transferred directly to the LRMC intensive care unit (ICU) from a combat theater military medical facility. In 22 (67%) of these patients, bloodstream infections were detected from blood cultures obtained within 48 hours of ICU admission.

Of the 45 patients with *A. baumannii* bloodstream infections at WRAMC, 39 (87%) were males; the median age was 39 years. Twenty-nine (64%) patients sustained traumatic injuries in the Iraq/Kuwait region. Of these, 18 (62%) had bloodstream infections detected from blood cultures obtained within 48 hours of hospital admission after transfer from a combat theater medical or other military medical facility.

Antimicrobial susceptibility testing (AST) was performed by using microdilution. Results of 33 *A. baumannii* isolates from LRMC and 45 isolates from WRAMC indicated widespread resistance to antimicrobial agents commonly used to treat infections with this organism.

In addition to LRMC and WRAMC, three other military treatment facilities have identified *A. baumannii* bloodstream infections in service members injured in Iraq, Kuwait, and Afghanistan: U.S. Navy hospital ship (USNS) Comfort (11 patients), National Naval Medical Center (NNMC), Bethesda, Maryland (eight), and Brooke Army Medical Center (BAMC), San Antonio, Texas (five).

Editorial Note:

A. baumannii are a species of gram-negative bacteria commonly found in water and soil. During 1963 - 2003, *A. baumannii* became an increasingly important cause of nosocomial infections, particularly in ICUs. Treatment of infections attributed to *A. baumannii* can be difficult because the organism has intrinsic resistance to certain antimicrobial agents and has acquired resistance to many others. In health-care settings, colonized and infected patients are often the sources of *A. baumannii* infections; however, the ability of the organism to survive for prolonged periods on environmental surfaces also has contributed to protracted outbreaks in these settings.

In a recent national survey of hospital laboratories, *A. baumannii* infections accounted for only 1.3% of health-care-associated bloodstream infections. However, the findings

in this report indicate an increase in the number of reported *A. baumannii* bloodstream infections in patients at military medical facilities in which service members injured in Iraq, Kuwait, and Afghanistan are treated.

The sources of the *A. baumannii* that led to the infections described in this report are under investigation. During the Vietnam War, *A. baumannii* was reported to be the most common gram-negative bacillus recovered from traumatic injuries to extremities, and more recent reports have identified *A. baumannii* infections in patients who suffered traumatic injuries, suggesting environmental contamination of wounds as a potential source. Although some of the patients identified in this report had evidence of bloodstream infections at the time of admission to military medical facilities, whether the infections were acquired from environmental sources in the field or during treatment at (or evacuation from) other military medical facilities (e.g., field hospitals) is unknown. Information on patients described in this report is being reviewed to examine potential risk factors for *A. baumannii* bloodstream infection. In addition to exploring traditionally reported risk factors such as antimicrobial exposure, ICU admission, vascular access, and mechanical ventilation, this investigation will involve detailed reviews of geographic locations where injuries occurred and reviews of the movement of injured patients through treatment facilities. An environmental microbiology survey of both indigenous soil samples and treatment facilities is also under way to explore the potential contribution of environmental contamination to this outbreak. Molecular analysis with pulsed-field gel electrophoresis of patient and environmental isolates will be performed to further characterize the potential contribution of environmental contamination.

The bacterial isolates described in this report demonstrated antimicrobial-resistance patterns similar to multidrug-resistant *A. baumannii* from ICUs in the United States and Europe. Data from the NNIS system also indicate that resistance among *Acinetobacter* isolates is increasing. The high level of antimicrobial resistance is a challenge to clinicians treating *A. baumannii* infections. In some cases, the only effective antimicrobial agent is colistin (polymyxin E); however, this agent is seldom used because of its high toxicity. Use of colistin, possibly in combination with other agents, might be effective; however, new agents active against multidrug-resistant *A. baumannii* are needed. Treatment of patients infected with *A. baumannii* is being monitored to determine factors predictive of success and failure, to better understand the impact of antimicrobial resistance on therapy, and to monitor the potential toxicities of treatment regimens that include colistin.

Identification of colonized and infected patients, combined with implementation of infection-control measures such as hand-hygiene and contact-isolation precautions, might help prevent transmission of this organism within medical facilities. Interventions recommended by military medical officials have included

1) institution of active surveillance of groin, axillary, and/or wound cultures for *A. baumannii* for all patients;
2) use of contact precautions for colonized or infected patients; and

3) increased availability and use of alcohol-based hand rubs.

Laboratory surveillance for *A. baumannii* has been initiated at LRMC, NNMC, WRAMC, and BAMC, and, as much as possible, at each forward-deployed combat support hospital and medical treatment facility in Iraq, Kuwait, and Afghanistan.

Clinicians who treat patients who have recently been hospitalized (especially in ICUs) at the military hospitals described in this report should be aware of the potential for colonization and infection with *A. baumannii*. Additional information on *A. baumannii* is available at http://www.cdc.gov/ncidod/hip. Clinical management and wound-care guidelines have been developed to help prevent and mitigate *A. baumannii* infections in military treatment facilities. Clinicians with specific questions about *A. baumannii* among U.S. service members should contact the U.S. Army Center for Health Promotion and Preventive Medicine, telephone 800-222-9698.

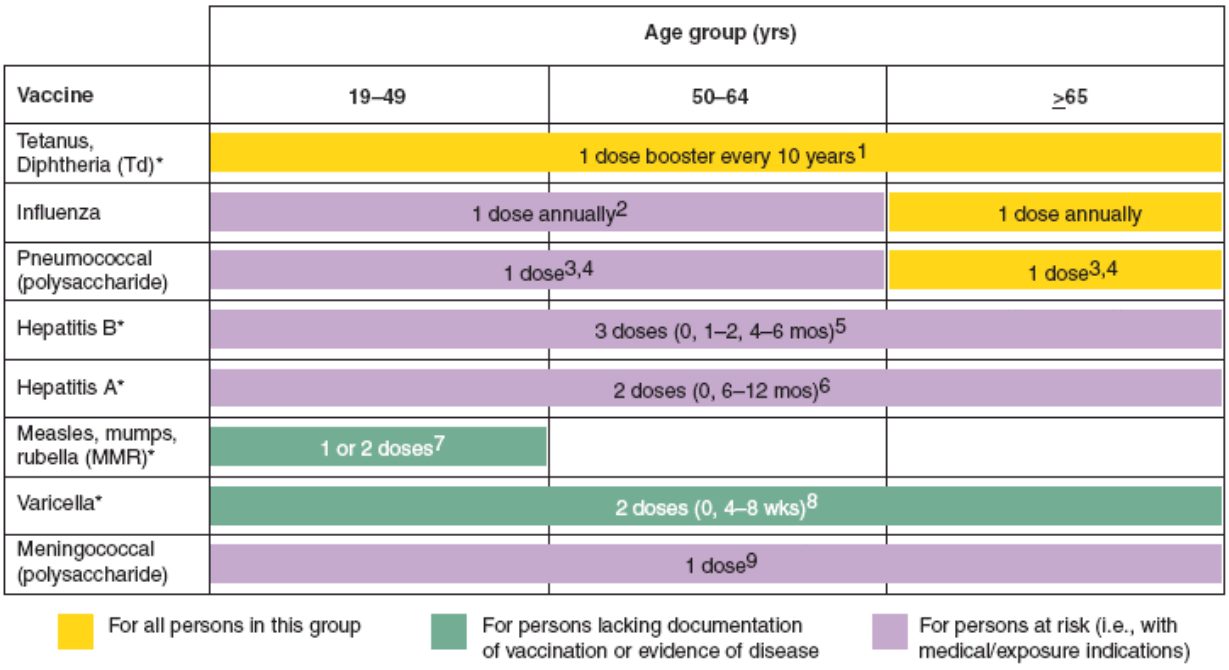
Recommended Adult Immunization Schedule

Source: "*Recommended Adult Immunization Schedule --- United States, October 2004--September 2005*", MMWR Weekly Report, November 19, 2004 / 53(45);Q1-Q4, http://www.cdc.gov/mmwr/preview/mmwrhtml/mm5345-Immunizationa1.htm.

CDC's Advisory Committee on Immunization Practices (ACIP) annually reviews the recommended Adult Immunization Schedule to ensure that the schedule reflects current recommendations for the use of licensed vaccines. In June 2004, ACIP approved the Adult Immunization Schedule for October 2004 - September 2005. This schedule has also been approved by the American Academy of Family Physicians and the American College of Obstetricians and Gynecologists.

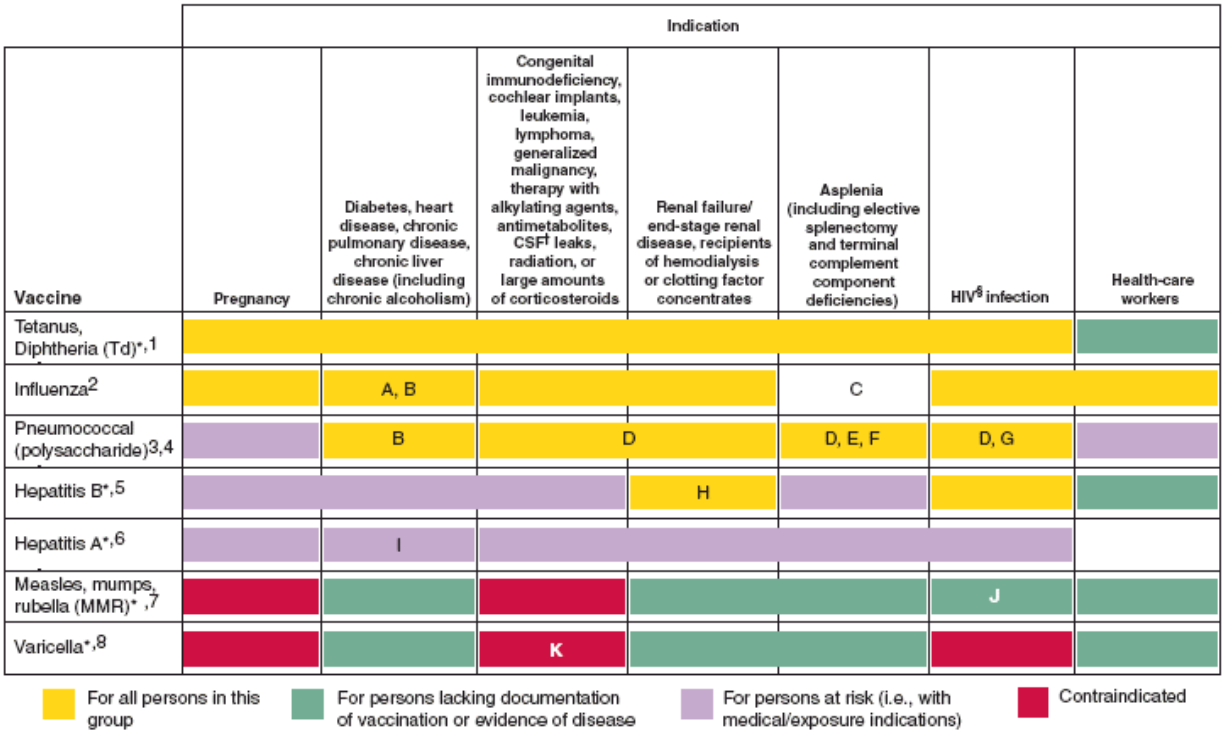
The Adult Immunization Schedule is available in English and Spanish at http://www.cdc.gov/nip/recs/adult-schedule.htm. General information about adult immunization, including recommendations concerning vaccination of persons with human immunodeficiency virus (HIV) and other immunosuppressive conditions, is available from state and local health departments and from the National Immunization Program at http://www.cdc.gov/nip. Vaccine information statements are available at http://www.cdc.gov/nip/publications/vis. ACIP statements for each recommended vaccine can be viewed, downloaded, and printed from CDC's National Immunization Program at http://www.cdc.gov/nip/publications/acip-list.htm. Instructions for reporting adverse events after vaccination to the Vaccine Adverse Event Reporting System (VAERS) are available at http://www.vaers.org or by telephone, 800-822-7967.

FIGURE 1. Recommended adult immunization schedule, by vaccine and age group — United States, October 2004–September 2005



* Covered by the Vaccine Injury Compensation Program.

FIGURE 2. Recommended adult immunization schedule, by vaccine and medical and other indications — United States, October 2004–September 2005



* Covered by the Vaccine Injury Compensation Program.
† Cerebrospinal fluid.
§ Human immunodeficiency virus.

For an explanation of the notes, see the article in the MMWR Weekly Report or on the CDC web site in the citation.

Study Highlights Worker Skin Exposure to Pesticides and Limitations of Measurement Methods

Agricultural pesticide workers are exposed to a significant level of pesticides through their skin. In a study published in the current online issue of *Annals of Occupational Hygiene,* researchers from the Johns Hopkins Bloomberg School of Public Health and the U.S. Environmental Protection Agency (EPA) analyzed agricultural test data provided by pesticide manufacturers. Their study showed that the dermal route of exposure to chlorpyrifos contributes substantially to workers' total exposure.

Although the findings were not unexpected, the study highlighted the significance of dermal exposure among pesticide workers. The authors of the study proclaim that accurate methods for estimating dermal exposure are important for assessing and protecting worker health.

Although exposure levels were below current occupational health standards and guidelines, the researchers found that dermal exposure represented a substantial portion of total exposure. For 34 out of 77 of the workers monitored in the study, more chlorpyrifos was absorbed through the skin than was inhaled. The researchers compared methods for estimating worker exposure by comparing residues found on clothing to levels of pesticide metabolites in urine. They observed a substantial difference, indicating that researchers may not be able to precisely evaluate worker exposure using these methods.

This difference in estimates makes it difficult to reconcile exposure and dose. It increases the uncertainty in assessing worker risk and it decreases the confidence in the effectiveness of protective measures. The authors noted that their study demonstrates that the EPA's Pesticide Registrant Database provides a valuable resource for improving methods for assessing exposure and protecting worker health.

Study of Low-Probability, High-Consequence Risks

Large-scale industrial accidents like Three Mile Island, hurricanes like Andrew, terrorist attacks like those on Sept. 11 are labeled "low-probability, high-consequence events." Making decisions about how to prepare for such extreme events is difficult. Balancing the benefits of strengthening a building against the costs requires a good understanding of these types of risks. The National Institute of Standards and Technology (NIST) sponsored a study that offers strategies for planning for low probability, high consequence events.

The study, conducted by the University of Pennsylvania's Wharton School, found that preparing for these types of events requires an understanding of risk "interdependencies." For example, a security plan is only as strong as its weakest link. Planning requires cooperation between public and private organizations because individuals and organizations don't often mitigate low probability risks without additional incentives.

The authors concluded that effective planning for extreme events depends on a complex interplay between risk assessment, perception and management. People need to understand the cumulative effects of an event. For example, a risk assessment for a power grid in Ohio must include the possible domino-like failures throughout the northeastern United States and Canada. Or put into a more universal context, more people will wear seatbelts if they know that they have a 33 percent chance of an accident over 50 years of driving than if they know there is 0.00001 percent chance for each trip.

An electronic copy of "Risk Analysis for Extreme Events: Economic Incentives for Reducing Future Losses," by Howard Kunreuther, Robert Meyer and Christophe Van den Bulte, is available at: www.bfrl.nist.gov/oae/oae.html.

OTHER ITEMS OF INTEREST

Health and Safety in Emergency Response

Citation: "*Health and Safety in Emergency Response: Who Is In Charge Anyway?*," Joselito S. Ignacio, The Synergist, January 2004.

Walking into an emergency response situation as an incident safety officer is always challenging. Depending on the type and complexity of the incident, the biggest test can be developing an on-site safety and health program rapidly and effectively. An incident safety officer or his or her designated staff recommends measures to protect personnel responding to an incident or supporting a response. The incident safety officer is an integral part of an incident command staff and directly advises the incident commander on all issues related to health and safety.

But who becomes an incident safety officer? It depends on the type of incident and who has the main responsibility for response. For example, in an oil spill the majority of responders would originate from the designated responsible party. The responsible party can, of course, have contractors and subcontractors responding to the incident, but would also have (or should also have) its own internal incident management team to fill key positions within an incident command system, including safety. If an incident involved a large natural disaster, the primary ICS staff could include a city or county's incident management team. Therefore, in a "typical" scenario, the group charged with incident safety could be the agency or organization with the largest assets involved in the response, with jurisdictional authority to respond and/or with the most liability due to cause.

In an incident where two or more large agencies (private or governmental) share authority and responsibility as negotiated among themselves, often termed unified command, other health and safety professionals can become integrated into the staff. Recently, OSHA developed a program for many of its compliance and consultant officers to participate in responses as assistant safety officers. Other federal agencies such as EPA, the Coast Guard and state entities such as state OSHA or state spill response agencies can contribute their health and safety staff to the effort.

How Does an Incident Safety Staff Grow?

Growth of an incident safety staff is based on one premise: value-add. With limited resources and time associated in any response, the benefit of bringing an additional assistant safety officer is based strictly on what specific duties/roles this individual will give to the overall organization.

Five general questions should be asked in determining whether additional safety staff members are necessary.

What are the incident response objectives? The incident safety officer first needs to identify the key objectives of the response. This will drive the myriad of activities and resources needed to accomplish those objectives.

How is the incident managed overall? In any large incident, effective response management may involve organizing one's assets by functionality and/or by geographic location. If assets are divided by their functional areas, groups are assembled to perform a specific function. Additional divisions can be formed where an operation is defined within a geographic area or functional responsibility.

Incident safety staff must assess whether their number is adequate to support the established divisions or groups. Depending on the size of the incident and asset locations, can the current safety staff conduct planning for the next operational period while also providing on-site safety support?

What are the major hazards to response and supporting assets? Look at the major hazards associated with the immediate release or associated fire/explosion; also look at the large hazards adjacent to the operation and associated with conducting or supporting the response.

What controls are needed to protect personnel from hazards? Preliminary exposure assessment for both physical and chemical hazards should occur immediately on reaching the scene. As quickly as possible, the incident safety staff should have site safety plans for both the incident(s) and the incident command post and support areas. The staff must also identify additional information requests required to determine additional assessments or controls. The second item is particularly important, because in the chaos and confusion early in an incident response, information will not flow smoothly or even be accurate. Assume nothing; verify everything. Seek out information and avoid making hasty decisions.

What additional safety assets in either equipment or personnel are needed to do one's job effectively? Based on the information gathered, an incident safety officer can begin determining specific personnel and/or equipment needed to support his/her staff function. For example, if chemical exposures are not adequately quantified, are additional industrial hygienists needed for the incident? What kind of air monitoring equipment is needed? Does the incident have sufficient site safety officers to enforce safety guidelines issued by the incident safety officer?

"Cooperate, Graduate"

Although each participating agency or organization may have its own specific interest in the response, the key to a successful and smooth response is best summed up in the adage "Cooperate, Graduate." Participating health and safety professionals from different agencies must learn to set aside agency-specific or even personality differences. The goal of the incident safety staff is to protect from harm all responders and support personnel regardless of where they come from and what purpose they serve. Incident safety staff who normally fills a federal, state or local compliance role where citations are issued must learn to resolve problems given the conditions, objectives and overall circumstances of an incident.

Further Explanations

Natural Disasters

Disasters, which are federally declared, are managed at the federal level through the Federal Emergency Management Agency under the Department of Homeland Security. Of course, disasters can be managed strictly at the county or state level if the county or state agencies have the capacity to respond adequately without federal intervention. In any disaster, components from local, state and federal entities will begin assessing the damage to a community's infrastructure, such as the water system, hospitals, government facilities, businesses and homes. This assessment process is termed Rapid Needs Assessment.

The Federal Response Plan, which dictates how the federal government responds to disasters, applies to a major disaster or emergency as defined under the Stafford Act. These include natural catastrophes; fire, flood or explosion regardless of cause; or any other occasion or instance for which the president determines that federal assistance is needed to supplement state and local efforts. (See the Federal Response Plan [Interim], 9230.1 – PL, January 2003, for more information.)

Oil Spills and Hazardous Substance Releases

When responding to oil spills and other types of hazardous material releases, a National Response System is used. The blueprint for such a system is the National Contingency Plan. This is a regulation developed to ensure that the resources and expertise of the federal government are available immediately for oil or hazardous substance releases that are beyond the capabilities of local and state responders. The NCP provides the framework for the NRS and establishes how it works (see the U.S. EPA Web site, www.epa.gov/superfund/programs/er/nrs/index.htm, for more information). Although any hazardous material release is initially localized, they can spread substantially, particularly oil spills in a sea or navigable waterway.

In accordance with the NCP, EPA is the lead agency for any oil spill or other HAZMAT release involving inland waterways. If the release occurs in coastal waters or deepwater ports, the U.S. Coast Guard is the lead. Clearly, both agencies can be involved, as well as state agencies. Within each of these agencies, there are designated federal on-scene coordinators who are responsible for monitoring or

directing responses to all oil spills and hazardous substance releases reported to the federal government. These individuals coordinate all federal efforts with and provide support and information to the local, state and regional response communities (see www.epa.gov/superfund/programs/er/nrs/nrsosc.htm for more information).

Radiological Response

The Federal Radiological Emergency Response Plan (FRERP) covers any peacetime radiological emergency within the United States or its territories that could require a federal response. These include emergencies at fixed nuclear facilities and emergencies that occur during the transportation of radioactive materials, such as radioactive waste or nuclear weapons.

The FRERP describes how the federal response will be organized. It includes guidelines for notifying federal agencies and states, for coordinating leadership of on-scene federal response activities and for coordinating federal public information activities and Congressional relations. The FRERP also suggests ways in which the state, local and federal agencies involved can most effectively integrate their actions.

The FRERP is an agreement among 17 federal agencies. The key participants are FEMA, the Nuclear Regulatory Commission, the Departments of Energy and Defense and EPA. The FRERP specifies the conditions under which each of the federal agencies assumes the role of lead federal agency and leads and coordinates the emergency response activities of federal agencies during a nuclear emergency.

For more information, visit www.epa.gov/radiation/rert/plans.htm#frerp.

Integration With Terrorism Response

In any suspected or confirmed act of terrorism, whether it involves a radiological emergency, a hazardous material release or an explosive device, the lead agency in the response will be the Department of Justice and associated state/local law enforcement agencies. The incident site now becomes a preserved crime scene, which involves evidentiary collection and careful documentation, as well as interviews with bystanders, first responders and victims still alive. Even as rescue efforts continue, management of the incident scene becomes tenuous and complex.

Depending on the type of incident and the affected community involved, the National Response System, the Federal Response Plan or the Federal Radiological Emergency Response Plan could be activated, either individually or in tandem if the affected areas are large or in multiple locations. However, federal agency heads, with their state counterparts, will eventually begin to delineate responsibilities to effectively manage the overall situation.

The challenge between the law enforcement and response/recovery communities when working together is determining priorities. Law enforcement agencies will aim toward investigating and prosecuting the appropriate individuals, while the response/recovery agencies will aim toward quickly cleaning up a site and restoring it to normal operations. As part of the response, incident safety officers will need to establish site safety plans to address their particular hazards.

Key Aspects of an Incident Safety Program

Every emergency response situation is unique, but there are common hazards. The author recommends that you begin your hazard assessment efforts with eight areas: climatic stress, fatigue, fall protection, electrical hazards, traffic safety, perimeter security, hazardous atmospheres and site safety plans/training. Assessing these conditions first and disseminating this information to the response and support staff via a site safety plan is a major key to success.

Looking for these eight items is "quick and dirty," requiring only minimal effort to recognize, evaluate and control but providing significant impact on responder health and safety.

1) **Climatic stress** may involve heat injuries such as heat exhaustion, heat rash or heat stroke, or cold-related injuries such as hypothermia. Both responders and victims will face similar stress conditions. In heat stress loads, plan for a tighter work/rest regimen for responders wearing any protective gear, water intake recommendations on a hourly basis and use of a buddy system to monitor for signs of heat injury. In cold stress situations, plan for adequate clothing requirements, availability and use of warming tents and proper work/rest cycles. Diet is a significant factor; responders may often neglect their own hunger for the sake of the mission. In addition, you must account for the additional load created by the Level A, B and C protective levels that first responders must wear during an initial phase and plan accordingly.
2) **Fatigue** has both a physical and psychological effect. Physically, first responders and support staff are faced with a work schedule where routine meals or breaks are suddenly interrupted. Work conditions suddenly change from an office or training environment to conditions involving little electrical power, water or restroom conveniences. Responders may have traveled several hours or days to augment a community's emergency services, only to be thrust into the operation without sufficient sleep or environmental or time acclimatization. Corrective actions include a recommended work/rest cycle; use of a buddy system to identify signs of fatigue; enforcement of operational periods, particularly among the main incident command staff personnel who often feel the need to exceed the established work shift; and finally, enforcement of fatigue recommendations in the field.
3) **Slips, trips and falls** are generic yet common hazards in areas involving a lot of equipment and actively mobile personnel and structures that may be unstable. If an explosion or earthquake occurs, the structural integrity of buildings and foundations becomes questionable. Ensure that adequate assessments by qualified engineers are conducted and suitable areas are identified and marked on a situation map. Review and modify the layout of equipment, vehicles and traffic flow to allow for easy egress and entry to the incident and avoid cluttering or blocking major avenues of approach. Required electrical cords or ropes lying on the ground should be protected from vehicle or personnel traffic but also laid appropriately to avoid trips.

Loose foundations or structures need to be identified on site maps, and response and support personnel should be briefed to avoid them until they have been cleared.

4) **Electrical hazards** can cause death or serious injury to responders. Toppled power lines, exposed power cords in buildings and even the proper installation of distribution boxes by response agencies all require adequate checks. Coordination with utility companies is first priority and normally done early in an incident. However, response personnel should have appropriate meters to verify that no current is present before attempting to handle electrical equipment or cords. Incident safety officers must instruct site safety officers to augment response efforts in checking these items. Generators, particularly in night operations, should be adequately grounded. Fueling of generators should involve bonding and grounding procedures.

5) **Traffic safety** is required to manage entry and exit of authorized vehicles into the scene, protect bystanders and responders and ease victim evacuation. Close coordination with local law enforcement is required. Speed limits, improvised speed bumps, stop signs, designated parking and/or traffic control officers should be used. If parked vehicles are still present and hinder traffic patterns, towing may be required. Entry control points should be established to verify the validity of entry, particularly near the incident command posts. In any case, the incident safety officer needs to ensure that a plan is developed and verified to work effectively.

6) **Perimeter security** is also critical for a safe operation. In coordination with local law enforcement and any hired security personnel, ensure security is provided at a minimum to the following areas: the incident scene (hot zone, warm zone and designated areas of the cold zone), incident command posts, triage areas, staging bases, helicopter landing zones, operations briefing areas and designated base camps or lodging areas for responders. Victims' families, the press or curious onlookers may wander into these critical areas, endangering themselves and response personnel. In addition, particularly if law enforcement investigations are occurring, scene preservation is a must. Looters or salvage collectors seeking souvenirs can pose significant problems.

   Don't forget that workplace violence is a constant issue, particularly during an emergency response. High stress, fatigue, emotional trauma and frustration can result in sudden outbursts of emotion and action. Having a strong security force is important for the safety and health of all involved.

7) **Hazardous atmospheres** must be identified and characterized as soon as possible. Any emergency involving explosions or building collapse can suddenly create confined spaces and gas line ruptures. Focus not only on the immediate site of interest but also on adjacent facilities where ruptured lines or damage may create dangerous situations. As with electrical issues, coordinate with the utility company early in the response. Pockets of gas or vapor accumulation from leaking hazardous materials pose serious threats.

In conjunction with incident safety staff, designated hazardous materials units should ensure that atmospheres are clearly characterized by testing for four main hazards: flammability/explosivity, oxygen levels, carbon monoxide and hydrogen sulfide. Use of a photoionization detector or flame ionization detector will increase the likelihood of detecting other chemicals that may be present. Colorimetric tubes can then be used to identify the chemical family involved and ensure the appropriate level of chemical protective clothing is used.

Hazardous material spills in other locations involving adjacent facilities or vehicles need to be identified and appropriately secured from access. All air monitoring data must be documented, with copies filed by both the incident safety officer and the documentation unit leader and attached as part of a site safety plan. Every operational period incident action plan should have air monitoring information and a site map locating the hazardous or uncharacterized atmospheres. Finally, decontamination plans should be reflected in the site safety plans. They should address decontamination procedures for entry response teams and support personnel who may encounter hazardous substances.

8) **Site safety plans and training** bring everything together to properly inform response personnel of hazards and the controls required. There are quite a few SSP templates available, but the author recommends that the OSHA Incident E-tool Web site (www.osha.gov/SLTC/etools/ics/index.html). Tailor the templates as necessary to fit the specific incident.

   In any incident, only one consistent SSP for each major operation or division/group/branch is required. In developing these SSPs, time is critical. Issue them quickly based on a fast but effective assessment of all response operations occurring on scene. SSPs can always be modified appropriately when additional information is received. With regard to agency representatives receiving guidance from their organization on health/safety on scene, entry into an incident requires them to follow the on-site incident safety officer's guidance and directives. Therefore, if a higher level of PPE is required than in their organization's standing operating procedures, then those higher-level PPE requirements are in effect. Individuals unable to comply with the incident safety directives must be escorted from the scene and from any other response or support operations associated with the incident.

   In addition to the SSP, training in the form of "tailgate meetings" or other briefing forums is required. Keep rosters of those receiving the safety and health information, documented by the supervisor or, for larger briefings, by designated personnel. Copies should be sent to the documentation unit leader and possibly the incident safety officer.

Mold Risk Assessment and Remediation

Citation: *"The Mold Matrix: Innovations in Risk Assessment and Remediation",* by Al Draper, Occupational Hazards, November 2004.

Mold is an insidious material that at its very early stages is quite natural and unassuming. It is a naturally occurring biological contaminant – with some positive characteristics, including the ability to break down leaves, wood and other plant debris.

In the indoor environment, however, unidentified and unremediated mold can be as significant and costly as most any environmental hazard. Water incursion and damp buildings are the primary sources of mold. Mold can survive almost anywhere with water and humidity (usually where relative humidity exceeds 60 percent). Standing water, water-damaged materials and wet surfaces also serve as a breeding ground for mold. There is no practical way to eliminate all molds and mold spores in the indoor environment; the best way to control mold growth is to control moisture.

Despite its stealthy nature, mold can be tested for, controlled, remediate and prevented through the use of tried-and-true methods and leading-edge technologies. In all cases, mold testing, control and remediation should be left to experts who understand the potential hazards and best practices.

Everyone, it seems, has a stake in ensuring that potential environmental hazards such as mold are addressed in a proactive, systematic way, but who knows for sure what's right? There are currently no nationwide standards or guidelines in place for environmental testing, remediation techniques, contractor qualifications, and worker training and protective equipment. Many specifications reference the pioneering New York City guidelines, which are clearly outdated for today's world. For example, the guidelines state that no containment is required for 10 square feet or less of active mold growth. However, recent research has measured up to 1 billion mold spores per square foot of drywall – the uncontained removal of which could lead to a severely contaminated facility!

So what can be done about the lack of consensus? Experienced professionals have an opportunity to be innovative – and an obligation to pursue "best of the best" innovations to guide their activities. In the author's company's experience, a three-step systems approach to mold risk assessment and remediation is essential. Such analysis enables building owners/managers and contractors to make risk-based determinations of which remediation measures and precautions are necessary.

Step One: Identify Type of Remediation Project

Mold remediation projects can be broken down into four basic types, based on the severity of the problem and the amount of corrective action required. In many ways, the mold remediation systems approach is similar to infection control best practices used in hospitals.

Type A (inspection and non-invasive activities) includes, but is not limited to:

- Removal of ceiling tiles and minimal destructive techniques for visual inspection
- Bulk, tape and/or surface sampling
- Establishment of containment barriers

Type B (small-scale, short-duration activities which create minimal dust) involves:

- Stains on non-porous surfaces that can be wiped clean
- Small spot of growth on ceiling tile or pipe insulation
- Small spill on carpet

Type C covers remediation work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components. Examples here include:

- Minor sheetrock removal and/or wall covering
- Significant removal of ceiling tile and insulation above tiles
- Minor duct cleaning and other work above ceilings
- Removal of non-cleanable carpet
- Any individual remediation activity that cannot be completed within a single work shift or weekend

Type D (major remediation projects) typically includes:

- Activities that require consecutive work shifts, and the potential for unauthorized personnel exposure
- Significant heavy mold growth throughout a building
- "Toxic" species of mold present
- Major contamination of ductwork and air handling system

Step Two: Identify Potential Exposed Individuals

Once you identify what kind of project you have, you are ready to consider "the people factor," the building occupants who are potentially exposed to the mold and may need to be protected during remediation. The author has identified four categories of people:

- Low risk, which includes transient employees (which could include short-term workers and workers who are in and out of the building frequently) and healthy adults.
- Medium risk, which includes teenagers, healthy elderly individuals and individuals exposed to the mold greater than 8 hours per day.

- High risk, which includes pregnant women, individuals on prescription medication or recovering from surgical procedures, and children between 6 months and 12 years old.
- Highest risk, which includes immuno-suppressed individuals, people receiving oncology treatment, sufferers of emphysema or other respiratory diseases, and infants.

Step Three: Create the Remediation/Precautions Matrix

The results of steps one and two can be plotted in a matrix to help determine what level of remediation activities and precautions need to be taken to achieve a positive outcome. The author identified four classes of remediation projects.

Classes I and II are relatively easy to initiate, and can be completed rather quickly with minimal impact on building inhabitants. Class I, for example, requires basic good housekeeping procedures such as minimizing dust, using drop cloths and cleaning up with HEPA-filtered vacuums. Class II is somewhat more intensive, with requirements for using EPA-registered disinfectants, containing construction waste, and limiting access to potentially contaminated work areas via minimal containments.

Classes III and IV require significant long-term control measures. For Class III remediation projects, the author recommends the following:

- Remove or isolate the HVAC system in areas where work is being done to prevent contamination of duct system.
- Erect hard critical barriers, *i.e.* sheetrock, plywood or plastic, to seal mold work area from the rest of the building.
- Utilize HEPA-equipped air filtration units to maintain negative air pressure within the work area.
- Require everyone entering the work area to wear personal protective equipment, including full-body coverings (disposable), gloves and half-mask HEPA filter respirators.
- Conduct daily supervisor walkthroughs at the beginning and end of every shift to verify integrity of critical barriers and negative pressure.
- Contain remediate waste before transport in tightly covered containers.
- Clean and decontaminate all equipment and protective equipment prior to final wipe down of the area.

Class IV projects require all of the above, plus measures such as:

- Cover all structures and equipment not being cleaned or removed.
- Wear rubber boots and full-face respirators (for remediation workers), in addition to the full-body coverings and gloves mentioned above.
- Construct a decontamination facility and require all personnel to pass through it before leaving work site

- Conduct exterior air monitoring throughout the duration of the project
- Consider evacuating high-risk individuals, at least during the most hazardous portions of the project, *i.e.* during large-scale demolition.

Other Best Practices

Best practices and leading-edge innovations for mold control and remediation continue to evolve. Traditional remediation measures include surface cleanup with detergent and water, HEPA vacuuming, and replacement of mold-laden building materials.

In addition, in the author's experience, two other best practices that may appear to be obvious continue to cause problems for building owners and remediation firms.

First, many organizations fail to identify all of the sources of unexpected intrusion of water into a facility. They stop looking for mold sources as soon as they find one and then they correct the problem, only to find out that other sources of moisture are also feeding the problem.

Second, organizations must realize that health considerations (notably allergic reactions, asthma and other respiratory complaints) are not the only reason to pursue mold control and remediation. Mold is a parasitic saprophyte, which means it cannot manufacture its own food; instead it derives its nutrients from the materials on which it is growing. As a result, mold is capable of causing significant structural damage to buildings.

Innovations in Remediation

For severe or unusual cases, there are a number of innovative tools and methods that are just beginning to gain widespread acceptance. Here is a summary of some of the more interesting innovations:

- Disinfectant biocides introduce a potentially hazardous substance into the indoor environment to deal with another hazardous substance. The AIHA has specifically decided not to recommend biocides. The author’s company has been using biocides for almost 10 years, in conjunction with detailed cleaning and careful component removal. They have never had a complaint about biocide-related health effects in more than 500 mold remediation projects, and they have never been called back due to mold re-growth where biocides were used. Such results demonstrate that biocides may have a role in the mold remediation field and may ultimately become the best of the best practices.

  Remember, many states require a contractor to have a pesticide application license in order to apply biocides, which should only be applied in accordance with manufacturers' labeling requirements.
- Fungal-inhibiting sealants (or encapsulates) have become controversial because some disreputable contractors have been using sealants to cover up existing mold. The author feels that is unacceptable. Fungal-inhibiting compounds should only be used to protect cleaned-up surfaces from a recurrence of mold. Some progressive builders and designers are putting fungal-inhibiting sealants in the wall cavities of

new buildings as they are being constructed. It may be the best "mold insurance" you can get.

Researchers and environmental firms are also working on a number of additional emerging technologies, including the use of gamma radiation, high heat and chlorine dioxide "dry gas" for mold remediation. The environmental industry needs to continue to challenge the status quo and drive best practices to the highest possible level. The art and science of mold remediation have come a long way in recent years, but clearly there are even more opportunities for success and innovation.

A Business Case for Sustainability

Citation: *"A Business Case for Sustainability",* by Nancy Westcott, Occupational Health and Safety, November 2004.

As the realities of resource depletion and global environmental degradation become more evident, the author sees a maturing and strengthening of the public's concern for and knowledge of the broad goals of environmental issues. Businesses will be increasingly scrutinized by both the public and regulatory agencies and will be required to develop approaches and practices to address immediate environmental concerns and adhere to the emerging principles and dictates of sustainability.

The business case for sustainability has been made by many, but it bears repeating here. According to Katrina Funk of Cap Gemini Ernst & Young, "The word 'sustainability' remains ambiguous and politically charged, particularly within the lexicon of business. When, as is commonly the case, the term is limited to encompass environmental management of social equity, sustainability is often perceived to be at odds with fiduciary responsibility and unlinked to business strategy. A sustainable organization is one whose characteristics and actions are designed to lead to a 'desirable future state' for all stakeholders.

"For investors, a desirable future state would surely include sustained revenue growth over the long term. For the talent market, it would include workforce diversity. Regulators and the community at large value environmental stewardship and social responsibility. Consumers seek useful, reliable, price-efficient products and services. From the view of employees of the company itself, a desirable future state includes maintaining viability and profitability, as well as managing risk while promoting innovation. Companies that actively manage responses to a wide range of sustainability indicators are better able to create value for all of these stakeholders over the long term."

Managers are discovering the intangible indicators that gauge sustainability can also be indicators of efficacy - that is, of how well a company is run. A sustainable business strategy in manufacturing facilities can improve all aspects of the corporate manufacturing activity. Environmental management is a good proxy for gauging overall management capabilities at both the strategic and operational levels. Cost advantages can result from adopting best practices that focus on companies' production processes.

Process-focused best practices can be seen as the basic precondition for implementation of all best practices at the environmental level and are the most basic building block of a responsible environmental strategy. The competitive result of environmental strategies that companies consider is short-term cost savings. In other words, process-focused best practices can create cost savings faster than other practices.

Firms can choose from a variety of technologies to reduce negative effects of their activities on the natural environment and on the business environment. Improved pollution prevention, attention to worker safety, reduction of VOCs, safe chemical handling, and using products that have no built-in obsolescence are some key components that demonstrate a firm's commitment to its environmental responsibility. They actually can improve the firm's financial status. In other words, going green improves the bottom line.

Some firms choose to meet or beat compliance targets as a way to demonstrate their commitment to sustainability. Proactive investing in environmental measures beyond those required by law can be good for the bottom line if for no other reason than to limit the downside risks of damages, hefty fines, litigation fees, and public relations disasters.

Chemical Handling and Worker Safety

Ixion Ceramics, Inc. a Chattanooga, Tenn.-based subsidiary of Ixion Technologies, Inc. is a designer and manufacturer of microcircuit packaging for telecommunications, military, aerospace, satellite communications, and other high-tech applications. The company manufactures precision-engineered technical ceramics and metals in two buildings totaling more than 100,000 square feet.

Ceramic materials are prepared as "tape" or "pastes," while metals are prepared solely as "pastes." The process of making ceramic tape begins by milling precise amounts of raw materials into homogeneous slurry, a mixture that is principally ceramic powder of controlled particle sizes combined with organic binders and solvents. The slurry is then poured onto a carrier and passed under a blade to produce a uniform coating. Once dried, this material becomes a ceramic-loaded "tape" that is easily handled in rolls or sheets for unfired processing. Metal pastes prepared the same way are subsequently used for screen-printing on green ceramic tape to form electronic circuits, while the ceramic paste is used as screen-printed dielectric layers. These electronic circuits can then be layered on one another to form three-dimensional ceramic packages, which are then fired and plated - thus producing the final part. Ixion's customers then populate these ceramic packages with electronic components to be used in their final applications.

Observing industry-standard facility and safety considerations is a key component of Ixion's fluid management program. The process chemicals are housed in a substantial environmental containment facility that will hold more than 6,000 gallons of fluids in the event of a spill or a flood.

With safety in mind and because of the flammable nature of the organic process solvents, including toluene and alcohols, Ixion has made it a policy that neither electric motors nor pumps can be used with or near these fluids. Most of the process chemicals and fluids arrive at the plant in 55-gallon containers. Until recently, many of these fluids were dispensed using a gravity-fed system.

The alcohols are used in the production of the liquid ceramic "slip" used to manufacture the ceramic tape. The cleaning solvents are used for various cleanup procedures in the tape casting and screen-printing departments. When handling the fluids and drums, the workers are protected from splashing by aprons, gloves, and safety goggles, and safety environmental spill containment pallets are in place in the event any local containment of spills is required.

David Kuster, the EHS coordinator for Ixion, wanted to improve the fluid transfer processes to make it safer for workers, more cost effective for the bottom line, and more environmentally compliant. Hand-operated pumps recently replaced several gravity-fed brass fixtures in Ixion's operation. The gravity-fed process involved threading the brass fixture into the small bung in the top of the drum, threading a vent into the large bung, placing the drum on a roll-down drum fixture, and tipping the drum into the horizontal position for dispensing.

There are many inherent difficulties with the gravity-fed spigot system. First, the spigots can clog up easily and can be difficult to remove. It can be very labor intensive and awkward to remove the fluid from the drum. Second, it is difficult to control the flow rate from the drum. Third, leaks are common with the spigot system, which contributes to fugitive inventory loss. Finally, this system does not allow for complete removal of all fluid from the drum, so additional labor and handling is required to make the drum Resource Conservation and Recovery Act (RCRA)-ready. But with the new pumps, Ixion Ceramics can make all of its containers RCRA ready, which means the drums have no more than 2 inches of product left in the drum after dispensing operations are completed. According to Kuster, "These pumps will literally leave a few ounces of fluid in the bottom of the drum, and that is a very good thing when you are paying for chemicals by the pound or gallon. Our company was leaving approximately 5 to 8 gallons in the drums when we were utilizing the brass (horizontal drum caddy) setup, and that was returned to the company that we bought it from. Then we had to pay for that much product again. What a great cost saver to be able to use that extra product. "

The employees at Ixion appreciate how much easier fluid handling is with the pumps. Several people have commented that dispensing their own chemicals no longer daunts them.

No More Leaking Drum Fittings

"Now the drums can stay in the upright position," Kuster said. "This greatly reduces the handling of the drums, injuries to our workers, and, guess what? No more leaking drum fittings." He added that the pumps "are a definite improvement for my safety program. These pumps nearly drain a drum dry. This helps on the disposal end when

every drum is already RCRA empty and ready to be disposed of. Our workers are safer and we are meeting the environmental goals of our company."

Besides being a safer alternative to the gravity-fed system, the alternative pump is "a real cost-saver," making it Ixion's pump of choice for its process chemicals, said Kuster.

Study Explores Link Between Power Lines, Childhood Leukemia

Health Day News reported that children living near high-voltage power cables may have double the risk of developing leukemia. However, the researchers cautioned that they weren't able to find a definitive link between the cables and the disease. The seven-year study by England's Department of Health indicated that children living within 100 meters of high-voltage electricity cables were more likely to suffer from leukemia. A total of 70,000 children under 15 years of age were studied as part of the research - half of the children had cancer. The scientists concluded that, for a small number of the children with the disease, high-voltage electricity may have been a factor in their illness. But other factors, including chance, could account for the finding. View the Health Day News article at http://www.healthday.com/view.cfm?id=522090. (CHPPM HIO Weekly Update – November 5, 2004)

New Bacteria Threaten Public Health

ABC News reported that many young athletes are being felled by a deadly bacterium, MRSA, that is sweeping the US and Europe. Medical experts are alarmed that MRSA, or methicillin-resistant *Staphylococcus aureus*, is just one of several deadly new strains of bacteria that are becoming resistant to modern antibiotics. A strain of tuberculosis has developed a resistance to most drug therapies and is now known as MDR-TB, or multi-drug-resistant tuberculosis. Some strains of staph have developed a level of resistance to the powerful antibiotic vancomycin, once the last defense against the bacteria. But after use of vancomycin became widespread, the staph bacteria mutated to a strain named VRSA, or vancomycin-resistant *Staphylococcus aureus*. VRE, or vancomycin-resistant *enterococci*, a bacteria that infects the urinary tract, wounds and other areas, has also grown resistant to the antibiotic. Joshua Lederberg, a Nobel Prize-winning geneticist, wrote that the ease of international travel, human encroachment into wilderness areas and urban crowding will continue to provide opportunities for the spread of infectious diseases. And microbes have been around for 3.5 billion years (compared to a mere 4.5 million years of human evolution). View the ABC News article at http://abcnews.go.com/Health/story?id=235781&page=1. (CHPPM HIO Weekly Update – November 12, 2004)

HHS to Spend $877 Million on New Anthrax Vaccine

Center for Infectious Disease Research & Policy (CIDRAP) News reported that Federal health officials today announced the award of an $877 million contract for 75 million doses of a new anthrax vaccine to protect the public and improve on the existing vaccine used by the military. VaxGen Inc. won the contract to produce and deliver the new vaccine within 3 years. The hope is that the vaccine will provide protection with three doses, so that 75 million doses would be enough for 25 million people. The

existing vaccine used by the Department of Defense requires six doses over 18 months, followed by annual boosters. The vaccine will go into the Strategic National Stockpile and be reserved for emergency use. View the CIDRAP News article at http://www.cidrap.umn.edu/cidrap/content/bt/anthrax/news/nov0404anthrax.html. (CHPPM HIO Weekly Update – November 12, 2004)

Army-Funded Effort Examines Androgen's Role in Bone Loss

EurekAlert reported that research on the role of the male sex hormone androgen in bone formation has piqued the interest of the United States military. The U.S. Army Medical Research and Materiel Command, looking to reduce stress fractures and preserve bone health among its young recruits, is funding a project to better understand the molecular and cellular events by which androgen influences the skeleton. "It turns out that one of the most common injuries sustained in basic training in both men and women is stress fracture in long bones. In this population, there's also anabolic steroid abuse," said the study's lead investigator. She added, "The goal of the Army in funding this grant is to identify factors that promote a healthy skeleton, that influence stress fractures, and to treat and prevent bone-weakening osteoporosis in the aging population." View the EurekAlert article at http://www.eurekalert.org/pub_releases/2004-11/ohs-aee_1111604.php. (CHPPM HIO Weekly Update – November 19, 2004)

Computer Use Linked To Eye Disease

BBC reported that heavy computer use could be linked to glaucoma, especially among those who are short-sighted. Glaucoma is caused by increased fluid pressure within the eye compressing the nerves at the back, which can lead to blindness if not treated. Researchers tested the sight of workers in four different Japanese companies, employing over 5,000 people each. Workers who were classified as heavy computer users were more likely to be long-sighted (hypermetropia) or short-sighted (myopia). Around a third (165) of these workers had suspected glaucoma. Upon further analysis, heavy computer use, suspected glaucoma and short-sightedness appeared to be interlinked. The authors do not know why this might be, but believe it could be that short-sighted people are more susceptible to computer use-related eye strain. View the BBC News article at http://news.bbc.co.uk/1/hi/health/4008185.stm. (CHPPM HIO Weekly Update – November 19, 2004)

INTERNET NEWS

Eye Safety Topic Page

Each day in the U.S. about 2,000 workers receive medical treatment for eye injuries that occur on the job. NIOSH is addressing the occupational eye injury burden in conjunction with the Healthy Vision objectives of the U.S. Department of Health and Human Services Healthy People 2010 program (http://www.healthyvision2010.org/safety/injury.asp). NIOSH has just released two new eye safety web pages. The main topic page on eye safety

(http://www.cdc.gov/niosh/topics/eye/) provides access to NIOSH eye safety resources, including a new general guidance web page on eye safety for infection control (http://www.cdc.gov/niosh/topics/eye/eye-infectious.html). This is an area of eye safety that is of increasing importance to a number of worker groups such as animal care/control workers, rescue and recovery workers, and transportation workers such as those involved in transportation from SARS endemic areas, in addition to healthcare workers. The primary eye safety topic page also provides links to a variety of other eye safety resources including eye injury data sources, related bibliographic citations, and numerous other eye safety standards, regulations, and guidance materials. For more information, contact Larry Jackson at LLJackson@cdc.gov.

Safety and Health Page on Chemical Reactivity Hazards

Workers and employers involved in the manufacture, distribution, use and storage of chemicals will benefit from a new web page - Chemical Reactivity Hazards. The page is a product of two national Alliances with OSHA: the Dow Chemical Company and the Reactives Alliance (consisting of the EPA and six organizations involved in the chemical industry).

Chemical reactivity is key to the chemical manufacturing industry. Still, such reactions do present serious and oftentimes catastrophic results to workers and process equipment when the hazard is not thoroughly understood and controlled. The purpose of the Chemical Reactivity Hazards page is to provide relevant information to employers and workers in order to ensure safe chemical operations. Find the page on OSHA's web site at http://www.osha.gov/SLTC/reactivechemicals/.

INDUSTRIAL HYGIENE PROFESSIONAL NEWS

ACGIH Elects New Officers

American Conference of Governmental Industrial Hygienists (ACGIH®) members have elected a new Vice Chair-Elect and a Member-At-Large to the Board of Directors for the year 2005.

Beverly S. Cohen, Ph.D. was elected to the position of Vice-Chair Elect. Dr. Cohen, a Professor of Environmental Medicine at the New York University School of Medicine, will assume the position of Vice Chair-Elect beginning January 1, 2005.

Mark R. Stenzel, MS, CIH has been elected as Member-At-Large to the ACGIH Board of Directors. His three-year term will begin January 1, 2005. Mr. Stenzel is currently President of Exposure Assessment Applications, LLC, a consulting company that specializes in exposure and risk assessments.

Judge Upholds ACGIH's Right to Publish TLVs

The ACGIH has been named as a defendant in lawsuits filed in the United States District Court in Macon, Georgia. The initial case is captioned *International Brominated Solvents Association and Aerosafe Products, Inc. v. ACGIH, Department of Labor (DOL), and Department of Health and Human Services (DHHS)* and involves ACGIH's

consideration of the following substances: 1-Bromopropane ("nPB" - n-Propylbromide), copper, silica and diesel exhaust ("DPM" - diesel particulate matter). The National Mining Association has filed a complaint to intervene in the first case but limited its concerns to silica, copper, and diesel exhaust.

The complaints allege that ACGIH is about to publish or revise TLVs® for the substances involved and seek to enjoin ACGIH from taking any action with regard to these substances. The complaints also allege that ACGIH is a government advisory committee; that ACGIH is required to follow the provisions of the Administrative Procedures Act (APA) but does not do so; and that ACGIH has tortuously published false and misleading information about the products sold by plaintiffs and interfered with the plaintiffs' business.

Plaintiffs filed a motion for a temporary restraining order (TRO). ACGIH opposed the TRO, claiming that under the First Amendment to the Constitution it has the right to publish its scientific opinions; that ACGIH is not a Federal Advisory Committee; that ACGIH is not a government agency and does not have to follow the APA; and that ACGIH has not engaged in any tort or published false or misleading information. A hearing on the TRO was held on November 23, 2004. On November 26, 2004, the court denied the plaintiffs' request for a TRO.

In a comprehensive 21-page opinion, Judge Hugh Lawson addressed each of the issues raised by the plaintiffs. The Court concluded that:

- Plaintiffs do not have standing to bring an action directly under the Federal Advisory Committee Act (FACA).
- An injunction, if issued, would be a prior restraint on free speech and that ACGIH is entitled to full constitutional protection against prior restraints.
- Publication of the ACGIH TLVs was not commercial speech or government speech and that the TLVs are fully protected by the First Amendment.

Judge Lawson stated that an injunction against publication of the TLVs ..."would amount to an abridgement of ACGIH's First Amendment speech rights." The Court went even further and reviewed whether the plaintiffs had met the requirement for a TRO. The Court noted that there is a four-pronged test for granting either a TRO or a preliminary injunction and plaintiffs have to meet every one of the four prongs before an injunction can be granted. The first prong requires that plaintiffs show that there is a substantial likelihood that they will succeed on the merits. After analyzing the plaintiffs' claims under FACA, the Court concluded that ACGIH is a private organization and not a government agency. Nor is it likely that ACGIH is covered by FACA. Further the Court found that there is no likelihood that plaintiffs will succeed in their claims under the Georgia Deceptive Trade Practices Act. Since there was no likelihood that the plaintiffs would succeed on any of their claims, the Court denied the TRO without looking at the other three prongs of the test.

The nature of these complaints calls into question the freedom of any party to undertake independent scientific research and publish results. This threatens the

credibility of the occupational hygiene profession and the ability of occupational hygienists to continue their work. Working with legal counsel, the ACGIH Board of Directors, along with other dedicated volunteers and ACGIH Staff have concluded that a vigorous defense of ACGIH and its members is essential if they are to continue to progress in the cause of worker health and safety. Board Chair, Vickie L. Wells, stated, "The nature of the allegations presents a real threat to the ability of professional practitioners to fully protect workers based upon sound and thorough science. These claims are unfounded and are without basis. At stake is the right of any organization or group to express scientific opinions based on their reasoned evaluation and judgment. These cases threaten our right to free speech as granted in the First Amendment to our Constitution." Wells continued, "After careful consideration and with the advice of experienced legal counsel, we have concluded that a vigorous and thorough defense of ACGIH and the IH profession is necessary. We stand by ACGIH and the significant contributions it has made for over half a century. We stand by our policies, procedures, and processes. We stand by our recommended Threshold Limit Values, and the fairness and thoroughness of the system used in their development and dissemination."

On November 30th, the plaintiffs filed a Motion for Expedited Discovery. The Motion for Expedited Discovery asked that ACGIH turn over all of its records, documents, etc. relating to the four substances in question in the case or relating to ACGIH's conflict of interest policies as it relates to the Committee members and/or Board members who dealt with these substances. Under expedited discovery, ACGIH would have had to provide this information prior to January 1, 2005. In addition, the motion asked that depositions of key ACGIH staff, Documentation authors, Committee members, and Board members be held in January. On the afternoon of December 1st, Judge Duross Fitzpatrick of the United States District Court in Macon, Georgia held a telephone hearing in the matter. After lengthy discussion, the Court denied the Plaintiffs' Motion.

ISHN's "State of the EHS" Survey Summary

Citation: *"ISHN's 21st annual White Paper "State of the EHS" survey",* Industrial Safety and Hygiene News, November 2004.

For the 2005 survey, they mailed 2,000 surveys to ISHN readers in August and received 511 returns, for a 26 percent response rate. In this issue, they present ten summary findings, along with some comparisons to a decade ago. In January's issue, they plan to give an in-depth look at responses by facility size and job function (safety vs. industrial hygiene vs. environmental).

1) What drives investments: OSHA rules

   OSHA regimes come and go, but respect for the regulations never wavers much for companies with safety and health pros on staff. OSHA compliance was a top goal of 73 percent of readers back in 1995. So what motivates companies to spend money on safety and health in 2005? OSHA compliance still dominates — cited by 65 percent of readers. Company values are coming on as an influence (cited by 57 percent). That puts values ahead of workers' comp savings (45 percent) and way ahead of CEO leadership (29 percent).

2) Selling execs: bottom line pitch hits a wall

   The business case for safety has had a hard time gaining traction. In 1995, 26 percent of readers wanted to sharpen their ability to document cost-savings. In 2005, 33 percent of work sites surveyed are investing in safety because it's seen as a competitive advantage.

3) Empowering employees: the quest continues

   Giving employees more safety responsibilities (training, inspections, investigations, etc.) will get big push in '05 - cited by 67 percent of readers. This is a never-ending quest. In 1995, 45 percent of readers said increasing use of employee safety teams was a top goal.

4) Behavioral safety: it's part of the program

   Behavior-based safety (BBS) seems safely ingrained now as a staple of many programs - to be used by 51 percent of readers next year. That's up significantly from 1995, when 23 percent were using BBS. Despite its "blame-the-worker" baggage, only 26 percent of pros say BBS is difficult to sell management. Selling it to employees might be a different story. Less popular tools: Management systems will be used by 28 percent of readers in '05; perception surveys by 15 percent.

5) Employee ownership: got to have it

   Of all the things you can do to make a workplace safe, what's most important? Get employees to handle those safety tasks, say 48 percent of readers. Call it delegating, empowering, off-loading or whatever, readers say employee involvement is more critical than OSHA compliance (cited by 45 percent as most important), ergonomics (13 percent), management systems (17 percent) or BBS (38 percent).

6) Budgets & staffing: mostly cut-resistant

   Ten years ago, 15 percent of readers were trimming their safety and health budgets. In 2005, 12 percent will be cutting back. In 1995, 19 percent of readers were adding to staff. Ten years later, 15 percent say they are expanding staff levels. And for the talk about layoffs in safety and health, eight percent of readers say their departments will cut staff in 2005. Ten years ago, ten percent were making cuts. Note: We are surveying more consultants now than a decade ago.

7) Measuring performance: lagging interest in leading indicators

   Leading indicators measure safety activities and processes (number of hazards identified and corrected, for example). Many experts say these metrics give you a better picture of the vigor and effectiveness of your safety efforts, compared to after-the-fact OSHA injury rates. But only 18 percent of readers say they use leading indicators. Injury rates have always been the yardstick for most execs when they study safety. And what management studies get measured. Ten years ago, improving rates was a top goal of 56 percent of readers.

8) Job descriptions: no time for new roles

   Ten years ago, 58 percent of readers said improving technical skills was a priority; 45 percent said they would be working on improving compliance skills. For all the talk about pros shifting from compliance cops to in-house counselors, few readers seem to have the time for new roles. Tradition still holds sway. In 2005, 38 percent will devote more time to training, 36 percent more time to technical issues, and 27 percent will put more emphasis on enforcing compliance. Twenty-two percent say they will work more on being "change agents," 22 percent will delegate more, and 22 percent will spend more time as executive advisors.

9) Safety cultures: searching for buy-in

   Readers are honest in appraising their workplace safety cultures. Only nine percent rate their cultures as world class. Most describe their cultures as above average (44 percent) or average (41 percent). Complacency isn't a problem, cited by only 20 percent. One-third see room for improvement. The biggest challenges: improving accountability for safety (cited by 56 percent) and employee ownership (46 percent), and management leadership (44 percent).

10) Job satisfaction: look who's smiling

   About four in ten readers (42 percent) say they will feel a rewarding sense of job satisfaction in 2005. Ten years ago, 46 percent felt satisfied in their jobs. Downsizing, outsourcing, globalization, work-life stresses - ten years of assorted pressures don't seem to have diminished spirits much.

PUBLICATIONS

New NIOSH Publications

Workers' Health Chartbook 2004: The NIOSH Worker Health Chartbook 2004 (DHHS [NIOSH] Publication No. 2004-146) is now available in printed form (Email pubstaff@cdc.gov or call 1-800-356-8573). The Chartbook consolidates information from the network of injury and illness surveillance tracking systems in the U.S. and is designed for agencies, organizations, employers, researchers, workers, and others interested in numbers of and trends in occupational injuries and illnesses. The document presents the data in an easy-to-read, visually compelling format. The Chartbook is accessible in electronic form at http://www.cdc.gov/niosh/docs/chartbook.

English/Spanish Language Guidance on Preventing Silicosis: A new NIOSH booklet provides easy-to-use recommendations in English and Spanish to help construction workers, abrasive blasters, and other employees to protect themselves from the risk of silicosis when they are potentially exposed on the job to silica dust. Silicosis: Learn the Facts! / Silicosis: Conozca los datos! (DHHS [NIOSH] Publication No. 2004-108) includes statistics on the prevalence of work-related deaths from silicosis and case studies with information to help employees recognize risk factors. The booklet notes that many people with work-related silicosis are only in their thirties. The booklet

can be ordered from the NIOSH toll-free information number, 1-800-35-NIOSH (1-800-356-4674). It is also available online at http://www.cdc.gov/niosh/docs/2004-108/.

Antineoplastic Agents - Occupational Hazards in Hospitals: Antineoplastic agents are widely used in cancer therapy because they can inhibit growth by disrupting cell division and killing actively growing cells. These agents can also cause health effects among health care workers who work with them. A summary of these health risks and means for protecting workers are available in a recent NIOSH Alert [NIOSH 2004]. The purpose of this brochure is to make you aware of the adverse health effects of antineoplastic agents, describe how you can be exposed to these agents, and provide and identify control methods and work practices to prevent or reduce your exposure to antineoplastic agents. The booklet can be ordered from the NIOSH toll-free information number, 1-800-35-NIOSH (1-800-356-4674). It is also available online at http://www.cdc.gov/niosh/docs/2004-102/.

Histoplasmosis - Protecting Workers at Risk: This booklet is a revised edition of the NIOSH document Histoplasmosis: Protecting Workers at Risk, which was originally published in September 1997. The updated information in this booklet will help readers understand what histoplasmosis is and recognize activities that may expose workers to the disease-causing fungus *Histoplasma capsulatum*. The booklet also informs readers about methods they can use to protect themselves and others from exposure. Outbreaks of histoplasmosis have shared similar circumstances: People who did not know the health risks of breathing in the spores of *H. capsulatum* became ill and sometimes caused others nearby to become ill when they disturbed contaminated soil or accumulations of bird or bat manure. Because they were unaware of the hazard, they did not take protective measures that could have prevented illness. This booklet will help prevent such exposures by serving as a guide for safety and health professionals, environmental consultants, supervisors, and others responsible for the safety and health of those working near material contaminated with *H. capsulatum*. Activities that pose a health risk to workers at these sites include disturbance of soil at an active or inactive bird roost or poultry house, excavation in regions where this fungus is endemic, and removal of bat or bird manure from buildings. The booklet can be ordered from the NIOSH toll-free information number, 1-800-35-NIOSH (1-800-356-4674). It is also available online at http://www.cdc.gov/niosh/docs/2005-109/.

ARMY ITEMS OF INTEREST

Army Preventive Medicine Training Opportunities

Basic Industrial Hygiene Techniques Course (6H-F11)

The Basic Industrial Hygiene Course provides officers, enlisted, and DoD civilians with a basic knowledge of industrial hygiene techniques. The course focuses on the recognition, evaluation, and control of occupational health hazards encountered in the workplace. The curriculum uses both conference and practical exercise to provide the

students with basic knowledge and practical application of industrial hygiene techniques. The course is conducted at the AMEDDC&S at Fort Sam Houston, Texas.

Confirmed Course Dates FY 05:

- 24 Jan - 04 Feb 2005
- 11 Jul - 22 Jul 2005

Military personnel must submit a DA Form 3838 and a memorandum from the supervisor explaining applicant's industrial hygiene duties by fax to the AMEDDC&S at (210)221-7541 (DSN 471-7541). Civilian personnel must submit a DD Form 1556 and a memorandum from the supervisor explaining applicant's industrial hygiene duties. The Industrial Hygiene Section will select personnel to attend the Basic Industrial Hygiene Course and send instructional letters to selected personnel approximately two weeks prior to the start of the course. For more information, see http://www.cs.amedd.army.mil/dphs/EQB%20Website/IH.htm.

Applied Ergonomics - 40 Hour Course

This 40-hour course is designed to develop installation level expertise in ergonomics. It provides all of the background and materials necessary to initiate, conduct, and maintain an installation ergonomics program. The course is comparable to civilian university-sponsored courses but provides additional critical DoD-specific information and resources. Department of Defense specific examples and program and policy issues will be covered in this tailored course. The course is conducted at White Marsh, MD.

Confirmed Course Dates FY 05:

- 4 - 7 April 2005

Applicants must be military or civilian personnel with responsibilities to directly support the DA industrial hygiene or occupational health program. The $150.00 registration fee may be paid by MIPR, Money Order or Check (made out to DFAS/DAO) and must be received before course date. Please include the statement "Registration fee for (your name) to attend the "Applied Ergonomics Course" on the MIPR, or on a note with the Money Order or Check. For more information, see https://usachppm.apgea.army.mil/TrainCon/Describe.aspx?Name=Applied_Ergonomics.

Intermediate Industrial Hygiene Topics (6H-F10)

This course provides training and continuing education in technical aspects of industrial hygiene topics. Specific content varies from year to year depending upon current issues. However, the course addresses the principle topics of respiratory protection, chemical protective clothing, and industrial ventilation. The course is conducted at Edgewood, MD.

Confirmed Course Dates FY 05:

- 7 - 18 March 2005

Applicants must have a BS in a related field or attendance at the 6H-F11, "Basic Industrial Hygiene Course", presented at the AMEDD Center & School, Fort Sam Houston, Texas or attended an IH Course either through AIHA, OSHA or an accredited university. Course spaces are reserved for MEDCOM military and civilian personnel. Other qualified personnel can attend on a space available basis. The cutoff date for receipt of registrations is 15 February 2005. For more information, see https://usachppm.apgea.army.mil/TrainCon/Describe.aspx?Name=Intermediate_Hygiene_topics.

ADMINISTRATIVE INFORMATION

This document was prepared for the U.S. Army Center for Health Promotion and Preventive Medicine (USACHPPM), Directorate of Occupational Health Sciences. The POC at the USACHPPM is Sandy Monk; Program Manager; Industrial Hygiene Management Program; DSN: 584-2439; COM: 410.436.2439; e-mail: Sandra.Monk@apg.amedd.army.mil.

This document summarizes information and regulatory actions that are relevant for Army Industrial Hygiene Program personnel. We distribute this summary in electronic form only. Please make it available to your staff if they do not have direct access to an electronic copy. If you would like to be added to the electronic mailing list or if your email address changes, please contact Sandy Monk, e-mail: Sandra.Monk@apg.amedd.army.mil; or call her at DSN: 584-2439; COM: 410.436.2439; fax: 410.436.8795.

At a minimum; we review the following publications in preparing this summary: Journal of Occupational and Environmental Hygiene; the Synergist; Today (ACGIH's Newsletter); The ABIH News; OSHA Week; the Federal Register; BNA OSHA Reporter; The Journal of Occupational and Environmental Medicine; The Journal of Environmental Health; Professional Safety; Occupational Hazards; Occupational Health and Safety; and Industrial Safety and Hygiene News. We also gather information from a variety of sources on the Internet.

If you have questions or comments; please contact Dean Taiani at dtaiani@lmi.org; 410-273-2605 or fax 410-273-7587.